



SEQUENCE LISTING

<110> Daniel E.H. Afar  
Rene S. Hubert  
Kahan Leong  
Arthur B. Raitano  
Douglas C. Saffran

<120> NOVEL 13-TRANSMEMBRANE PROTEIN EXPRESSED  
IN PROSTATE CANCER

<130> 51158-20011.11

<140> US 10/807,635

<141> 2004-03-23

<150> US 10/285,045

<151> 2002-10-30

<150> US 09/547,789

<151> 2000-04-12

<150> 60/128,858

<151> 1999-04-12

<160> 71

<170> FastSEQ for Windows Version 4.0

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<212> DNA

<213> Homo sapiens

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<221> CDS

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Pro Val Lys Tyr Asp Pro Ser Phe Arg Gly Pro Ile Lys Asn Arg Ser	
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tgc aca gat gtc atc tgc tgc gtc ctc ttc ctg ctc ttc att cta ggt	144
Cys Thr Asp Val Ile Cys Cys Val Leu Phe Leu Leu Phe Ile Leu Gly	
35 40 45	

tac atc gtg gtg ggg att gtg gcc tgg ttg tat gga gac ccc cgg caa	192
Tyr Ile Val Val Gly Ile Val Ala Trp Leu Tyr Gly Asp Pro Arg Gln	
50 55 60	

gtc ctc tac ccc agg aac tct act ggg gcc tac tgt ggc atg ggg gag	240
Val Leu Tyr Pro Arg Asn Ser Thr Gly Ala Tyr Cys Gly Met Gly Glu	

Asn	Lys	Asp	Lys	Pro	Tyr	Leu	Leu	Tyr	Phe	Asn	Ile	Phe	Ser	Cys	Ile		
80					85					90					95		
ctg	tcc	agc	aac	atc	atc	tca	gtt	gct	gag	aac	ggc	cta	cag	tgc	ccc	336	
Leu	Ser	Ser	Asn	Ile	Ile	Ser	Val	Ala	Glu	Asn	Gly	Leu	Gln	Cys	Pro		
				100					105					110			
aca	ccc	cag	gtg	tgt	gtg	tcc	tcc	tgc	ccg	gag	gac	cca	tgg	act	gtg	384	
Thr	Pro	Gln	Val	Cys	Val	Ser	Ser	Cys	Pro	Glu	Asp	Pro	Trp	Thr	Val		
			115					120					125				
gga	aaa	aac	gag	ttc	tca	cag	act	gtt	ggg	gaa	gtc	ttc	tat	aca	aaa	432	
Gly	Lys	Asn	Glu	Phe	Ser	Gln	Thr	Val	Gly	Glu	Val	Phe	Tyr	Thr	Lys		
		130					135					140					
aac	agg	aac	ttt	tgt	ctg	cca	ggg	gta	ccc	tgg	aat	atg	acg	gtg	atc	480	
Asn	Arg	Asn	Phe	Cys	Leu	Pro	Gly	Val	Pro	Trp	Asn	Met	Thr	Val	Ile		
	145					150					155						
aca	agc	ctg	caa	cag	gaa	ctc	tgc	ccc	agt	ttc	ctc	ctc	ccc	tct	gct	528	
Thr	Ser	Leu	Gln	Gln	Glu	Leu	Cys	Pro	Ser	Phe	Leu	Leu	Pro	Ser	Ala		
160					165				170						175		
cca	gct	ctg	ggg	cgc	tgc	ttt	cca	tgg	acc	aac	gtt	act	cca	ccg	gcg	576	
Pro	Ala	Leu	Gly	Arg	Cys	Phe	Pro	Trp	Thr	Asn	Val	Thr	Pro	Pro	Ala		
				180					185					190			
ctc	cca	ggg	atc	acc	aat	gac	acc	acc	ata	cag	cag	ggg	atc	agc	ggt	624	
Leu	Pro	Gly	Ile	Thr	Asn	Asp	Thr	Thr	Ile	Gln	Gln	Gly	Ile	Ser	Gly		
			195					200					205				
ctt	att	gac	agc	ctc	aat	gcc	cga	gac	atc	agt	gtt	aag	atc	ttt	gaa	672	
Leu	Ile	Asp	Ser	Leu	Asn	Ala	Arg	Asp	Ile	Ser	Val	Lys	Ile	Phe	Glu		
		210					215					220					
gat	ttt	gcc	cag	tcc	tgg	tat	tgg	att	ctt	gtt	gcc	ctg	ggg	gtg	gct	720	
Asp	Phe	Ala	Gln	Ser	Trp	Tyr	Trp	Ile	Leu	Val	Ala	Leu	Gly	Val	Ala		
	225					230					235						
ctg	gtc	ttg	agc	cta	ctg	ttt	atc	ttg	ctt	ctg	cgc	ctg	gtg	gct	ggg	768	
Leu	Val	Leu	Ser	Leu	Leu	Phe	Ile	Leu	Leu	Leu	Arg	Leu	Val	Ala	Gly		
240					245					250					255		
ccc	ctg	gtg	ctg	gtg	ctg	atc	ctg	gga	gtg	ctg	ggc	gtg	ctg	gca	tac	816	
Pro	Leu	Val	Leu	Val	Leu	Ile	Leu	Gly	Val	Leu	Gly	Val	Leu	Ala	Tyr		
				260					265					270			
ggc	atc	tac	tac	tgc	tgg	gag	gag	tac	cga	gtg	ctg	cgg	gac	aag	ggc	864	
Gly	Ile	Tyr	Tyr	Cys	Trp	Glu	Glu	Tyr	Arg	Val	Leu	Arg	Asp	Lys	Gly		
			275					280					285				
gcc	tcc	atc	tcc	cag	ctg	ggg	ttc	acc	acc	aac	ctc	agt	gcc	tac	cag	912	
Ala	Ser	Ile	Ser	Gln	Leu	Gly	Phe	Thr	Thr	Asn	Leu	Ser	Ala	Tyr	Gln		
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agc	gtg	cag	gag	acc	tgg	ctg	gcc	gcc	ctg	atc	gtg	ttg	gcg	gtg	ctt	960	
Ser	Val	Gln	Glu	Thr	Trp	Leu	Ala	Ala	Leu	Ile	Val	Leu	Ala	Val	Leu		

305	310	315	
gaa gcc atc ctg ctg ctg atg ctc atc ttc ctg cgg cag cgg att cgt			1008
Glu Ala Ile Leu Leu Leu Met Leu Ile Phe Leu Arg Gln Arg Ile Arg			
320	325	330	335
att gcc atc gcc ctc ctg aag gag gcc agc aag gct gtg gga cag atg			1056
Ile Ala Ile Ala Leu Leu Lys Glu Ala Ser Lys Ala Val Gly Gln Met			
	340	345	350
atg tct acc atg ttc tac cca ctg gtc acc ttt gtc ctc ctc ctc atc			1104
Met Ser Thr Met Phe Tyr Pro Leu Val Thr Phe Val Leu Leu Leu Ile			
	355	360	365
tgc att gcc tac tgg gcc atg act gct ctg tac ctg gct aca tcg ggg			1152
Cys Ile Ala Tyr Trp Ala Met Thr Ala Leu Tyr Leu Ala Thr Ser Gly			
	370	375	380
caa ccc cag tat gtg ctc tgg gca tcc aac atc agc tcc ccc ggc tgt			1200
Gln Pro Gln Tyr Val Leu Trp Ala Ser Asn Ile Ser Ser Pro Gly Cys			
	385	390	395
gag aaa gtg cca ata aat aca tca tgc aac ccc acg gcc cac ctt gtg			1248
Glu Lys Val Pro Ile Asn Thr Ser Cys Asn Pro Thr Ala His Leu Val			
400	405	410	415
aac tcc tcg tgc cca ggg ctg atg tgc gtc ttc cag ggc tac tca tcc			1296
Asn Ser Ser Cys Pro Gly Leu Met Cys Val Phe Gln Gly Tyr Ser Ser			
	420	425	430
aaa ggc cta atc caa cgt tct gtc ttc aat ctg caa atc tat ggg gtc			1344
Lys Gly Leu Ile Gln Arg Ser Val Phe Asn Leu Gln Ile Tyr Gly Val			
	435	440	445
ctg ggg ctc ttc tgg acc ctt aac tgg gta ctg gcc ctg ggc caa tgc			1392
Leu Gly Leu Phe Trp Thr Leu Asn Trp Val Leu Ala Leu Gly Gln Cys			
	450	455	460
gtc ctc gct gga gcc ttt gcc tcc ttc tac tgg gcc ttc cac aag ccc			1440
Val Leu Ala Gly Ala Phe Ala Ser Phe Tyr Trp Ala Phe His Lys Pro			
	465	470	475
cag gac atc cct acc ttc ccc tta atc tct gcc ttc atc cgc aca ctc			1488
Gln Asp Ile Pro Thr Phe Pro Leu Ile Ser Ala Phe Ile Arg Thr Leu			
480	485	490	495
cgt tac cac act ggg tca ttg gca ttt gga gcc ctc atc ctg acc ctt			1536
Arg Tyr His Thr Gly Ser Leu Ala Phe Gly Ala Leu Ile Leu Thr Leu			
	500	505	510
gtg cag ata gcc cgg gtc atc ttg gag tat att gac cac aag ctc aga			1584
Val Gln Ile Ala Arg Val Ile Leu Glu Tyr Ile Asp His Lys Leu Arg			
	515	520	525
gga gtg cag aac cct gta gcc cgc tgc atc atg tgc tgt ttc aag tgc			1632
Gly Val Gln Asn Pro Val Ala Arg Cys Ile Met Cys Cys Phe Lys Cys			
	530	535	540

tgc ctc tgg tgt ctg gaa aaa ttt atc aag ttc cta aac cgc aat gca	1680
Cys Leu Trp Cys Leu Glu Lys Phe Ile Lys Phe Leu Asn Arg Asn Ala	
545 550 555	
tac atc atg atc gcc atc tac ggg aag aat ttc tgt gtc tca gcc aaa	1728
Tyr Ile Met Ile Ala Ile Tyr Gly Lys Asn Phe Cys Val Ser Ala Lys	
560 565 570 575	
aat gcg ttc atg cta ctc atg cga aac att gtc agg gtg gtc gtc ctg	1776
Asn Ala Phe Met Leu Leu Met Arg Asn Ile Val Arg Val Val Val Leu	
580 585 590	
gac aaa gtc aca gac ctg ctg ctg ttc ttt ggg aag ctg ctg gtg gtc	1824
Asp Lys Val Thr Asp Leu Leu Leu Phe Phe Gly Lys Leu Leu Val Val	
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Gly Gly Val Gly Val Leu Ser Phe Phe Phe Phe Ser Gly Arg Ile Pro	
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Gly Leu Gly Lys Asp Phe Lys Ser Pro His Leu Asn Tyr Tyr Trp Leu	
625 630 635	
ccc atc atg acc tcc atc ctg ggg gcc tat gtc atc gcc agc ggc ttc	1968
Pro Ile Met Thr Ser Ile Leu Gly Ala Tyr Val Ile Ala Ser Gly Phe	
640 645 650 655	
ttc agc gtt ttc ggc atg tgt gtg gac acg ctc ttc ctc tgc ttc ctg	2016
Phe Ser Val Phe Gly Met Cys Val Asp Thr Leu Phe Leu Cys Phe Leu	
660 665 670	
gaa gac ctg gag cgg aac aac ggc tcc ctg gac cgg ccc tac tac atg	2064
Glu Asp Leu Glu Arg Asn Asn Gly Ser Leu Asp Arg Pro Tyr Tyr Met	
675 680 685	
tcc aag agc ctt cta aag att ctg ggc aag aag aac gag gcg ccc ccg	2112
Ser Lys Ser Leu Leu Lys Ile Leu Gly Lys Lys Asn Glu Ala Pro Pro	
690 695 700	
gac aac aag aag agg aag aag tga cagctccggc cctgatccag gactgcaccc	2166
Asp Asn Lys Lys Arg Lys Lys *	
705 710	
cacccccacc gtccagccat ccaacctcac ttgcgccttac aggtctccat tttgtggtaa	2226
aaaaaggttt taggccaggc gccgtggctc acgcctgtaa tccaacactt tgagaggctg	2286
aggcgggcgg atcacctgag tcaggagttc gagaccagcc tggccaacat ggtgaaacct	2346
ccgtctctat taaaaataca aaaattagcc gagagtgggtg gcatgcacct gtcacccag	2406
ctactcggga ggctgaggca ggagaatcgc ttgaacccgg gaggcagagg ttgcagtga	2466
ccgagatcgc gccactgcac tccaacctgg gtgacagact ctgtctccaa aacaaaaaa	2526
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<211> 710

<212> PRT

<213> Homo sapiens

<400> 2

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Thr	Asp	Val	Ile	Cys	Cys	Val	Leu	Phe	Leu	Leu	Phe	Ile	Leu	Gly	Tyr	35	40	45	
Ile	Val	Val	Gly	Ile	Val	Ala	Trp	Leu	Tyr	Gly	Asp	Pro	Arg	Gln	Val	50	55	60	
Leu	Tyr	Pro	Arg	Asn	Ser	Thr	Gly	Ala	Tyr	Cys	Gly	Met	Gly	Glu	Asn	65	70	75	80
Lys	Asp	Lys	Pro	Tyr	Leu	Leu	Tyr	Phe	Asn	Ile	Phe	Ser	Cys	Ile	Leu	85	90	95	
Ser	Ser	Asn	Ile	Ile	Ser	Val	Ala	Glu	Asn	Gly	Leu	Gln	Cys	Pro	Thr	100	105	110	
Pro	Gln	Val	Cys	Val	Ser	Ser	Cys	Pro	Glu	Asp	Pro	Trp	Thr	Val	Gly	115	120	125	
Lys	Asn	Glu	Phe	Ser	Gln	Thr	Val	Gly	Glu	Val	Phe	Tyr	Thr	Lys	Asn	130	135	140	
Arg	Asn	Phe	Cys	Leu	Pro	Gly	Val	Pro	Trp	Asn	Met	Thr	Val	Ile	Thr	145	150	155	160
Ser	Leu	Gln	Gln	Glu	Leu	Cys	Pro	Ser	Phe	Leu	Leu	Pro	Ser	Ala	Pro	165	170	175	
Ala	Leu	Gly	Arg	Cys	Phe	Pro	Trp	Thr	Asn	Val	Thr	Pro	Pro	Ala	Leu	180	185	190	
Pro	Gly	Ile	Thr	Asn	Asp	Thr	Thr	Ile	Gln	Gln	Gly	Ile	Ser	Gly	Leu	195	200	205	
Ile	Asp	Ser	Leu	Asn	Ala	Arg	Asp	Ile	Ser	Val	Lys	Ile	Phe	Glu	Asp	210	215	220	
Phe	Ala	Gln	Ser	Trp	Tyr	Trp	Ile	Leu	Val	Ala	Leu	Gly	Val	Ala	Leu	225	230	235	240
Val	Leu	Ser	Leu	Leu	Phe	Ile	Leu	Leu	Leu	Arg	Leu	Val	Ala	Gly	Pro	245	250	255	
Leu	Val	Leu	Val	Leu	Ile	Leu	Gly	Val	Leu	Gly	Val	Leu	Ala	Tyr	Gly	260	265	270	
Ile	Tyr	Tyr	Cys	Trp	Glu	Glu	Tyr	Arg	Val	Leu	Arg	Asp	Lys	Gly	Ala	275	280	285	
Ser	Ile	Ser	Gln	Leu	Gly	Phe	Thr	Thr	Asn	Leu	Ser	Ala	Tyr	Gln	Ser	290	295	300	
Val	Gln	Glu	Thr	Trp	Leu	Ala	Ala	Leu	Ile	Val	Leu	Ala	Val	Leu	Glu	305	310	315	320
Ala	Ile	Leu	Leu	Leu	Met	Leu	Ile	Phe	Leu	Arg	Gln	Arg	Ile	Arg	Ile	325	330	335	
Ala	Ile	Ala	Leu	Lys	Glu	Ala	Ser	Lys	Ala	Val	Gly	Gln	Met	Met		340	345	350	
Ser	Thr	Met	Phe	Tyr	Pro	Leu	Val	Thr	Phe	Val	Leu	Leu	Ile	Cys		355	360	365	
Ile	Ala	Tyr	Trp	Ala	Met	Thr	Ala	Leu	Tyr	Leu	Ala	Thr	Ser	Gly	Gln	370	375	380	
Pro	Gln	Tyr	Val	Leu	Trp	Ala	Ser	Asn	Ile	Ser	Ser	Pro	Gly	Cys	Glu	385	390	395	400
Lys	Val	Pro	Ile	Asn	Thr	Ser	Cys	Asn	Pro	Thr	Ala	His	Leu	Val	Asn	405	410	415	
Ser	Ser	Cys	Pro	Gly	Leu	Met	Cys	Val	Phe	Gln	Gly	Tyr	Ser	Ser	Lys	420	425	430	
Gly	Leu	Ile	Gln	Arg	Ser	Val	Phe	Asn	Leu	Gln	Ile	Tyr	Gly	Val	Leu				

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Gly Leu Phe Trp Thr Leu Asn Trp Val Leu Ala Leu Gly Gln Cys Val		
450	455	460
Leu Ala Gly Ala Phe Ala Ser Phe Tyr Trp Ala Phe His Lys Pro Gln		
465	470	475
Asp Ile Pro Thr Phe Pro Leu Ile Ser Ala Phe Ile Arg Thr Leu Arg		
485	490	495
Tyr His Thr Gly Ser Leu Ala Phe Gly Ala Leu Ile Leu Thr Leu Val		
500	505	510
Gln Ile Ala Arg Val Ile Leu Glu Tyr Ile Asp His Lys Leu Arg Gly		
515	520	525
Val Gln Asn Pro Val Ala Arg Cys Ile Met Cys Cys Phe Lys Cys Cys		
530	535	540
Leu Trp Cys Leu Glu Lys Phe Ile Lys Phe Leu Asn Arg Asn Ala Tyr		
545	550	555
Ile Met Ile Ala Ile Tyr Gly Lys Asn Phe Cys Val Ser Ala Lys Asn		
565	570	575
Ala Phe Met Leu Leu Met Arg Asn Ile Val Arg Val Val Val Leu Asp		
580	585	590
Lys Val Thr Asp Leu Leu Leu Phe Phe Gly Lys Leu Leu Val Val Gly		
595	600	605
Gly Val Gly Val Leu Ser Phe Phe Phe Phe Ser Gly Arg Ile Pro Gly		
610	615	620
Leu Gly Lys Asp Phe Lys Ser Pro His Leu Asn Tyr Tyr Trp Leu Pro		
625	630	635
Ile Met Thr Ser Ile Leu Gly Ala Tyr Val Ile Ala Ser Gly Phe Phe		
645	650	655
Ser Val Phe Gly Met Cys Val Asp Thr Leu Phe Leu Cys Phe Leu Glu		
660	665	670
Asp Leu Glu Arg Asn Asn Gly Ser Leu Asp Arg Pro Tyr Tyr Met Ser		
675	680	685
Lys Ser Leu Leu Lys Ile Leu Gly Lys Lys Asn Glu Ala Pro Pro Asp		
690	695	700
Asn Lys Lys Arg Lys Lys		
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 <213> Homo sapiens

<220>  
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ggt ggt ggt gaa acc cag ctg gga gat gga ggc gcc ctc gtc ccg cag	96
Val Gly Gly Glu Thr Gln Leu Gly Asp Gly Gly Ala Leu Val Pro Gln	
20 25 30	
cac tcg gta ctc ctc cca gca gta gta gat gcc ata tgc cag cac gcc	144
His Ser Val Leu Leu Pro Ala Val Val Asp Ala Ile Cys Gln His Ala	
35 40 45	

cag cac tcc cag gat c  
 Gln His Ser Gln Asp  
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160

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 Val Gly Gly Glu Thr Gln Leu Gly Asp Gly Gly Ala Leu Val Pro Gln  
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 His Ser Val Leu Leu Pro Ala Val Val Asp Ala Ile Cys Gln His Ala  
 35 40 45  
 Gln His Ser Gln Asp  
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 Cys Cys Val Leu Phe Leu Ile Phe Ile Leu Gly Tyr Ile Ile Val Gly  
 35 40 45  
 Leu Val Ala Trp Val Tyr Gly Asp Pro Arg Gln Val Leu Tyr Pro Arg  
 50 55 60  
 Asn Ser Thr Gly Ala Tyr Cys Gly Val Gly Asp Asn Lys Asp Lys Pro  
 65 70 75 80  
 Tyr Val Leu Tyr Phe Asp Ile Leu Ser Cys Ala Ala Ala Ile Asn Ile  
 85 90 95  
 Ile Ser Ile Ala Glu Asn Gly Leu Gln Cys Pro Thr Pro Gln Val Cys  
 100 105 110  
 Val Ser Ser Cys Pro Leu Ala Pro Trp Ala Val Glu Val Phe Gln Phe  
 115 120 125  
 Ser Lys Thr Val Gly Glu Val Tyr Gly Glu Arg Arg Asn Phe Cys Leu  
 130 135 140  
 Pro Ala Val Ser Pro Asp Met Ile Val Glu Glu Ser Leu Gln Lys Gly  
 145 150 155 160  
 Leu Cys Pro Arg Phe Leu Leu Pro Ser Thr Pro Ala Leu Gly Arg Cys  
 165 170 175  
 Phe Pro Leu Pro Asn Ile Asn Phe Thr Leu Pro Glu Asp Leu Arg Ile  
 180 185 190  
 Asn Asn Thr Thr Val Ser Asn Gly Ile Ser Gly Leu Leu Asp Ser Ile  
 195 200 205  
 Asn Ala Arg Asp Val Ser Val Lys Ile Phe Glu Asp Phe Ala Gln Ser  
 210 215 220  
 Trp Tyr Trp Ile Leu Val Ala Leu Gly Val Ala Leu Ala Leu Ser Leu  
 225 230 235 240

Leu Phe Ile Leu Leu Leu Arg Leu Val Ala Ala Pro Leu Val Leu Leu  
 245 250 255  
 Leu Ile Val Gly Val Leu Ala Val Leu Ala Tyr Gly Ile Tyr His Cys  
 260 265 270  
 Trp Gln Gln Tyr Gln Val Phe Arg Asp Lys Gly Ala Ser Ile Thr Gln  
 275 280 285  
 Leu Gly Phe Thr Thr Asn Phe Ser Ala Tyr Gln Ser Val Lys Glu Thr  
 290 295 300  
 Trp Leu Ala Ala Leu Ile Val Leu Ala Val Leu Glu Gly Ile Leu Leu  
 305 310 315 320  
 Leu Met Leu Ile Phe Leu Arg Gln Arg Ile Arg Ile Ala Ile Ala Leu  
 325 330 335  
 Leu Lys Glu Ala Ser Arg Ala Val Gly Gln Met Met Ser Thr Met Phe  
 340 345 350  
 Tyr Pro Leu Val Thr Phe Val Leu Leu Val Ile Cys Ile Gly Tyr Trp  
 355 360 365  
 Ala Val Thr Ala Leu Tyr Leu Ala Thr Ser Gly Gln Pro Gln Tyr Ile  
 370 375 380  
 Tyr Trp Ala Ser Asn Thr Ser Thr Pro Gly Cys Glu Asn Val Pro Val  
 385 390 395 400  
 Asn Met Thr Cys Asp Pro Met Ala Pro Leu Asn Ser Ser Cys Pro Asn  
 405 410 415  
 Leu Lys Cys Val Phe Lys Gly Tyr Ser Thr Thr Gly Leu Ala Gln Arg  
 420 425 430  
 Ser Leu Phe Asn Leu Gln Ile Tyr Gly Val Leu Gly Leu Phe Trp Thr  
 435 440 445  
 Val Asn Trp Val Leu Ala Leu Gly Gln Cys Val Leu Ala Gly Ala Phe  
 450 455 460  
 Ala Ser Phe Tyr Trp Ala Phe His Lys Pro Arg Asp Ile Pro Thr Phe  
 465 470 475 480  
 Pro Leu Ser Ser Ala Phe Ile Arg Thr Leu Arg Tyr His Thr Gly Ser  
 485 490 495  
 Leu Ala Phe Gly Ala Leu Ile Leu Ser Leu Val Gln Ile Ala Arg Val  
 500 505 510  
 Ile Leu Glu Tyr Ile Asp His Lys Leu Arg Gly Ser Gln Asn Pro Val  
 515 520 525  
 Ala Arg Cys Ile Ile Cys Cys Phe Lys Cys Cys Leu Trp Cys Leu Glu  
 530 535 540  
 Lys Phe Ile Lys Phe Leu Asn Arg Asn Ala Tyr Ile Met Ile Ala Ile  
 545 550 555 560  
 Tyr Gly Lys Asn Phe Cys Val Ser Ala Lys Asn Ala Phe Met Leu Leu  
 565 570 575  
 Met Arg Asn Val Leu Arg Val Val Val Leu Asp Lys Val Thr Asp Leu  
 580 585 590  
 Leu Leu Phe Phe Gly Lys Leu Leu Val Val Gly Gly Val Gly Val Leu  
 595 600 605  
 Ser Phe Phe Phe Phe Ser Gly Arg Ile Lys Gly Leu Gly Lys Asp Phe  
 610 615 620  
 Glu Asn Pro Asn Leu Asn Tyr Tyr Trp Leu Pro Ile Met Thr Ser Ile  
 625 630 635 640  
 Met Gly Ala Tyr Val Ile Ala Ser Gly Phe Phe Ser Val Phe Gly Met  
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 Cys Val Asp Thr Leu Phe Leu Cys Phe Leu Glu Asp Leu Glu Arg Asn  
 660 665 670  
 Asp Gly Ser Gln Glu Arg Pro Tyr Tyr Met Pro Lys Ala Leu Leu Lys  
 675 680 685  
 Ile Leu Gly Lys Lys Asn Glu Ala Pro Thr Gly Gly Lys Thr Arg Lys



690 695 700

Lys  
705

<210> 6  
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<220>  
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<222> (58)...(2172)

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 Met  
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 Glu Asp Glu Arg Lys Asn Gly Ala Tyr Gly Thr Pro Gln Lys Tyr Asp  
 5 10 15

ccc act ttc aaa gga ccc att tac aat agg ggc tgc acg gat atc ata 156  
 Pro Thr Phe Lys Gly Pro Ile Tyr Asn Arg Gly Cys Thr Asp Ile Ile  
 20 25 30

tgc tgt gtg ttc ctg ctc ctg gcc att gtg ggc tac gtg gct gta ggc 204  
 Cys Cys Val Phe Leu Leu Leu Ala Ile Val Gly Tyr Val Ala Val Gly  
 35 40 45

atc ata gcc tgg act cat gga gac cct cga aag gtg atc tac ccc act 252  
 Ile Ile Ala Trp Thr His Gly Asp Pro Arg Lys Val Ile Tyr Pro Thr  
 50 55 60 65

gat agc cgg ggc gag ttc tgc ggg cag aag ggc aca aaa aac gag aac 300  
 Asp Ser Arg Gly Glu Phe Cys Gly Gln Lys Gly Thr Lys Asn Glu Asn  
 70 75 80

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 Cys Pro Asp Arg Tyr Leu Thr Tyr Leu Asn Ala Arg Ser Ser Arg Asp  
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 Phe Glu Tyr Tyr Lys Gln Phe Cys Val Pro Gly Phe Lys Asn Asn Lys  
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Pro Ser Lys Pro Leu Ala Arg Arg Cys Phe Pro Ala Ile His Ala Tyr	
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Lys Gly Val Leu Met Val Gly Asn Glu Thr Thr Tyr Glu Asp Gly His	
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Gly Ser Arg Lys Asn Ile Thr Asp Leu Val Glu Gly Ala Lys Lys Ala	
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Asn Gly Val Leu Glu Ala Arg Gln Leu Ala Met Arg Ile Phe Glu Asp	
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Tyr Thr Val Ser Trp Tyr Trp Ile Ile Ile Gly Leu Val Ile Ala Met	
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Ala Met Ser Leu Leu Phe Ile Ile Leu Leu Arg Phe Leu Ala Gly Ile	
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Met Val Trp Val Met Ile Ile Met Val Ile Leu Val Leu Gly Tyr Gly	
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Ile Phe His Cys Tyr Met Glu Tyr Ser Arg Leu Arg Gly Glu Ala Gly	
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Tyr Leu His Leu Arg Gln Thr Trp Leu Ala Phe Met Ile Ile Leu Ser	
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Tyr Val Met Cys Ser Leu Leu Tyr Pro Leu Val Thr Phe Phe Leu Leu	
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Cys Leu Cys Ile Ala Tyr Trp Ala Ser Thr Ala Val Phe Leu Ser Thr	
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Thr Ala Lys Thr Cys Asn Pro Glu Thr Phe Pro Ser Ser His Glu Ser	
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Arg Gln Cys Pro Asn Ala Arg Cys Gln Phe Val Phe Tyr Gly Gly Glu	
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Ser Gly Tyr His Arg Ala Leu Leu Gly Leu Gln Ile Phe Asn Ala Phe	
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Tyr His Thr Gly Ser Leu Ala Phe Gly Ala Leu Ile Leu Ala Ile Val	
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Gln Ile Ile Arg Val Ile Leu Glu Tyr Leu Asp Gln Arg Leu Lys Ala	
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Ala Glu Asn Lys Phe Ala Lys Cys Leu Met Thr Cys Leu Lys Cys Cys	
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Phe Trp Cys Leu Glu Lys Phe Ile Lys Phe Leu Asn Arg Asn Ala Tyr	
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Ile Met Ile Ala Ile Tyr Gly Thr Asn Phe Cys Thr Ser Ala Arg Asn	
565 570 575	
gcc ttc ttc ctg ctc atg aga aac atc atc aga gtg gct gtc ctg gat	1836
Ala Phe Phe Leu Leu Met Arg Asn Ile Ile Arg Val Ala Val Leu Asp	
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Lys Val Thr Asp Phe Leu Phe Leu Leu Gly Lys Leu Leu Ile Val Gly	
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agt gtg ggg atc ctg gct ttc ttc ttc ttc acc cac cgt atc agg atc	1932

Ser Val Gly Ile Leu Ala Phe Phe Phe Phe Thr His Arg Ile Arg Ile  
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630 635 640

acg gtg atc gtt ggc tcc tac ttg att gca cac ggt ttc ttc agc gtc 2028  
Thr Val Ile Val Gly Ser Tyr Leu Ile Ala His Gly Phe Phe Ser Val  
645 650 655

tat ggc atg tgt gtg gac acg ctg ttc ctc tgc ttc ttg gag gac ctg 2076  
Tyr Gly Met Cys Val Asp Thr Leu Phe Leu Cys Phe Leu Glu Asp Leu  
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Glu Arg Asn Asp Gly Ser Ala Glu Arg Pro Tyr Phe Met Ser Ser Thr  
675 680 685

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Gly Ile Ile Ala Trp Thr His Gly Asp Pro Arg Lys Val Ile Tyr Pro  
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Thr Asp Ser Arg Gly Glu Phe Cys Gly Gln Lys Gly Thr Lys Asn Glu  
65 70 75 80  
Asn Lys Pro Tyr Leu Phe Tyr Phe Asn Ile Val Lys Cys Ala Ser Pro  
85 90 95  
Leu Val Leu Leu Glu Phe Gln Cys Pro Thr Pro Gln Ile Cys Val Glu  
100 105 110  
Lys Cys Pro Asp Arg Tyr Leu Thr Tyr Leu Asn Ala Arg Ser Ser Arg  
115 120 125  
Asp Phe Glu Tyr Tyr Lys Lys Gln Phe Cys Val Pro Gly Phe Lys Asn Asn

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Lys Gly Val Ala Glu Val	Leu Arg Asp Gly Asp Cys Pro Ala Val Leu			
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Ile Pro Ser Lys Pro Leu	Ala Arg Arg Cys Phe Pro Ala Ile His Ala			
	165	170	175	
Tyr Lys Gly Val Leu Met	Val Gly Asn Glu Thr Thr Tyr Glu Asp Gly			
	180	185	190	
His Gly Ser Arg Lys Asn	Ile Thr Asp Leu Val Glu Gly Ala Lys Lys			
	195	200	205	
Ala Asn Gly Val Leu Glu	Ala Arg Gln Leu Ala Met Arg Ile Phe Glu			
	210	215	220	
Asp Tyr Thr Val Ser Trp	Tyr Trp Ile Ile Ile Gly Leu Val Ile Ala			
225	230	235	240	
Met Ala Met Ser Leu Leu	Phe Ile Ile Leu Leu Arg Phe Leu Ala Gly			
	245	250	255	
Ile Met Val Trp Val Met	Ile Ile Met Val Ile Leu Val Leu Gly Tyr			
	260	265	270	
Gly Ile Phe His Cys Tyr	Met Glu Tyr Ser Arg Leu Arg Gly Glu Ala			
	275	280	285	
Gly Ser Asp Val Ser Leu	Val Asp Leu Gly Phe Gln Thr Asp Phe Arg			
	290	295	300	
Val Tyr Leu His Leu Arg	Gln Thr Trp Leu Ala Phe Met Ile Ile Leu			
305	310	315	320	
Ser Ile Leu Glu Val Ile	Ile Ile Leu Leu Ile Phe Leu Arg Lys			
	325	330	335	
Arg Ile Leu Ile Ala Ile	Ala Leu Ile Lys Glu Ala Ser Arg Ala Val			
	340	345	350	
Gly Tyr Val Met Cys Ser	Leu Leu Tyr Pro Leu Val Thr Phe Phe Leu			
	355	360	365	
Leu Cys Leu Cys Ile Ala	Tyr Trp Ala Ser Thr Ala Val Phe Leu Ser			
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Thr Ser Asn Glu Ala Val	Tyr Lys Ile Phe Asp Asp Ser Pro Cys Pro			
385	390	395	400	
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	405	410	415	
Ser Arg Gln Cys Pro Asn	Ala Arg Cys Gln Phe Val Phe Tyr Gly Gly			
	420	425	430	
Glu Ser Gly Tyr His Arg	Ala Leu Leu Gly Leu Gln Ile Phe Asn Ala			
	435	440	445	
Phe Met Phe Phe Trp Leu	Ala Asn Phe Val Leu Ala Leu Gly Gln Val			
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Thr Leu Ala Gly Ala Phe	Ala Ser Tyr Tyr Trp Ala Leu Arg Lys Pro			
465	470	475	480	
Asp Asp Leu Pro Ala Phe	Pro Leu Phe Ser Ala Phe Gly Arg Ala Leu			
	485	490	495	
Arg Tyr His Thr Gly Ser	Leu Ala Phe Gly Ala Leu Ile Leu Ala Ile			
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Val Gln Ile Ile Arg Val	Ile Leu Glu Tyr Leu Asp Gln Arg Leu Lys			
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Ala Ala Glu Asn Lys Phe	Ala Lys Cys Leu Met Thr Cys Leu Lys Cys			
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Cys Phe Trp Cys Leu Glu	Lys Phe Ile Lys Phe Leu Asn Arg Asn Ala			
545	550	555	560	
Tyr Ile Met Ile Ala Ile	Tyr Gly Thr Asn Phe Cys Thr Ser Ala Arg			
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Asn Ala Phe Phe Leu Leu	Met Arg Asn Ile Ile Arg Val Ala Val Leu			
	580	585	590	

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Gly	Ser	Val	Gly	Ile	Leu	Ala	Phe	Phe	Phe	Phe	Thr	His	Arg	Ile	Arg
		610				615					620				
Ile	Val	Gln	Asp	Thr	Ala	Pro	Pro	Leu	Asn	Tyr	Tyr	Trp	Val	Pro	Ile
		625				630				635					640
Leu	Thr	Val	Ile	Val	Gly	Ser	Tyr	Leu	Ile	Ala	His	Gly	Phe	Phe	Ser
				645					650					655	
Val	Tyr	Gly	Met	Cys	Val	Asp	Thr	Leu	Phe	Leu	Cys	Phe	Leu	Glu	Asp
			660					665					670		
Leu	Glu	Arg	Asn	Asp	Gly	Ser	Ala	Glu	Arg	Pro	Tyr	Phe	Met	Ser	Ser
		675					680					685			
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